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Reserve
TIMELY FARM TOPICS 18a

(Farm Science Serves the Nation No. 9)

A HOW SCIENCE HAS IMPROVED THE SUGAR BEET

Recorded Tuesday, February 13, 1945, by Ernest Moore and M. L. DuMars, Office of Information, USDA. Script by Josephine Hemphill. Time, without announcer's parts, 10 minutes.

ANNOUNCER: (LIVE) Our supply of sugar is lower today than any time since the war began. And it looks as if the job of increasing that supply falls right into the lap of the sugar beet grower. Yes, the sugar beet is a mighty important crop these days.

Listen, by transcription, to the story of the sugar beet...from the United States Department of Agriculture.

How the beet got to America, how it was almost wiped out by disease, and how farm science came to the rescue...will be told by Ernie Moore and Duke DuMars.

Okay, Ernie. On with your story!

TRANSCRIPTION

MUSIC: "WHEN I TAKE MY SUGAR TO TEA"

ERNIE MOORE: So we're going musical today.

DUKE DUMARS: Don't you like music?

MOORE: Sure I do.

DUMARS: Our musician got so interested in the sugar beet, he --

MOORE: What's that?

DUMARS: Yes, he's going to stay and listen to your story.

MOORE: Well, that's fine, but where'd you get the idea it's my story? Aren't you going to take part?

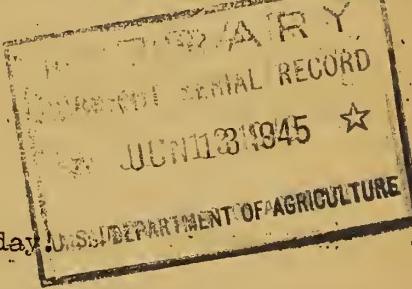
DUMARS: Ernie, I --

MOORE: Don't tell me you didn't read those bulletins -- I brought up here the other day.

DUMARS: I left 'em on the organ bench, and the organist read 'em. Now he knows all about sugar beets -- and I don't know a thing!

MOORE: Well after all -- you know who discovered the sugar in the beet root.

MUSIC: "ACH DU LIEBER AUGUSTINE"



DUMARS: Sure I know who discovered the sugar. A German scientist.

MOORE: (Well, with help like that --) Yes, it was a German chemist named Marggraf. In 1747, he found that the sugar in the beet root...in the ordinary beets the farmers fed their livestock...the beet sugar was exactly the same as cane sugar.. Some 50 years later -- a student of Marggraf's, named Achard, set up the first beet sugar factory in the world.

DUMARS: Still using ordinary field beets?

MOORE: Yes, and they certainly were a queer mixture. Some had red roots... some white...some pink...some mottled. A few had quite a bit of sugar, for those days...and others had hardly any. To find out which had the most, Achard would take a chunk out of a beet root, taste it, and if it happened to be sweeter than the others he'd save the root for seed.

DUMARS: I s'pose the red roots turned out to be the sweetest.

MOORE: Oh no. Oh no indeed!

DUMARS: My mistake.

MOORE: The beets with white roots were the sweetest. Although of course, even they weren't very high in sugar, according to our present standards. Now about this time scientists in another country, basing their work on Achard's -- Duke, do you know where the next work was done? Or do you need another musical cue.

MUSIC: "MADEMOISELLE FROM ARMENTIERES"

DUMARS: I'd say the next work was done in France!

MOORE: (How could you miss!) In France, around 1811, they really needed sugar. Napoleon was at war with England. France was shut off by embargo, and couldn't get cane sugar from the West Indies. All right, said Napoleon, we'll make our own sugar, from beets. So the French farmers planted sugar beets, and before long there were 40 factories going. Making sugar at a great rate, for those times. Then, in 1815 --

DUMARS: Battle of Waterloo. Napoleon defeated.

MOORE: And cane sugar flowed in again from the Indies.

DUMARS: Must have knocked Napoleon's beet sugar business into a cocked hat.

MOORE: Just about ruined the business. Now our next stop takes us to --

MUSIC: "YANKEE DOODLE"

DUMARS: Next stop, U.S.A.

MOORE: And where was the first beet sugar factory?

DUMARS: California!

MOORE: Not by a good 3,000 miles.

DUMARS: What do I get for trying?

MOORE: Nothing. The first beet sugar factory in the U.S.A. was at Northampton, Massachusetts. They made a little sugar, in 1838, but it didn't amount to much. And it was the same story for the next 40 or 50 years. If you recall your history, of the pioneers of Utah --

MUSIC: "OH SUSANNA"

DUMARS: Ernie, I really know this one. Didn't the Mormons, around 1850 --

MOORE: 1852.

DUMARS: They needed sugar so badly, they bought up a whole sugar works -- the machinery -- over in Liverpool, and had it shipped to New Orleans. Then they took it by boat up to Fort Leavenworth, Kansas, loaded the whole outfit in 40 covered wagons drawn by ox teams -- and started out across the plains to Utah. Nearly five months later -- they unloaded their sugar works in Prevo.

MOORE: Duke, that's exactly right!!

DUMARS: Oh, I'm not entirely -- unschooled.

MOORE: But go on. What happened to the sugar works?

DUMARS: Why -- didn't it make sugar?

MOORE: Oh no. No indeed!

DUMARS: Well what did it make?

MOORE: A kind of molasses. And even that was so strong, as somebody said, "it would take the end of your tongue off."

DUMARS: I thought Utah was a pioneer in sugar making.

MOORE: It was. In 1891, at Lehi, they had the first beet sugar factory in the world -- equipped with machinery made in the United States. And this time it made sugar.

DUMARS: What was wrong the first time?

MOORE: They just didn't have the technical knowledge. But after California blazed the way, in 1870, the industry really got started. By 1900 there were 30 factories -- all the way from Michigan to California. All turning out sugar. During the next 15 or 20 years more and more factories were built. And then, Duke, when things looked so promising --

MUSIC: CALAMITOUS

DUMARS: What in the world happened?

MOORE: The sugar beet fields...in the West...were hit by a terrible disease known as "curly top." You've heard of the beet leaf-hopper?

DUMARS: Yes.

MOORE: It's a small insect that injects a poison in the beet leaves. Makes the leaves curl up, and the plant's no good for sugar. Well, after the First World War, curly top got really bad.

DUMARS: What did the war have to do with it?

MOORE: The war caused farmers to plow up the range to grow wheat. And that was just playing into the hands of the beet leaf-hopper. Weeds got a start on the plowed land. Russian thistle. Mustard. And if there's anything the beet leaf-hopper likes, it's Russian thistle.

DUMARS: With a dash of mustard?

MOORE: Exactly! The hoppers increased by the millions.

DUMARS: I see. And pretty soon they had a housing problem.

MOORE: That's right. So each spring they moved into the irrigated valleys of the West, where farmers raised sugar beets. Whole fields were ruined. All the farmer's hard work was wasted. Factories shut down. It looked like the end... And then, Duke, when things were at their very worst --

MUSIC: TRIUMPHANT

DUMARS: Science to the rescue!

MOORE: Yes sir! With a beet that would grow in spite of curly top. A beet known as "U.S.1."

DUMARS: Where'd it come from?

MOORE: Well, that's quite a story. Even in sugar beet fields destroyed by curly top, plant breeders noticed there were always a few plants that survived. These were carefully saved for seed, and that little bit of seed was planted. Not in ordinary fields, but in places where exposure to curly top was just as bad as they could make it.

DUMARS: And that seed did all right?

MOORE: It certainly did -- when ordinary beets just gave up. So the remnant of seed was increased, just as fast as possible -- and that's how we got U.S.1.

DUMARS: Introduced by the United States Department of Agriculture.

MOORE: That's right. U.S.1 held the fort, till the plant breeders could develop varieties even more resistant. The latest is "Improved U.S. 22." Of course they get better all the time.

DUMARS: Ernie, there's one thing I still don't understand.

MOORE: What's that, Duke.

DUMARS: All these years, weren't we getting practically all our sugar-beet seed from Europe?

MOORE: Yes, clear up to the First World War.

DUMARS: Didn't it ever occur to anybody...to ask for beets resistant to curly top?

MUSIC: A WARNING "OH-OH!"

DUMARS: Oh-Oh! Must be trouble ahead for somebody!

MOORE: My friend, I'm glad you put that question to me...and not to a plant scientist.

DUMARS: You think he'd be embarrassed?

MOORE: Not the plant scientist. No. In Europe, Duke -- they don't have curly top.

DUMARS: Is that a fact?

MOORE: Curly top is native to America. If you'd read those bulletins -- or if you'd talked with Dr. G. H. Coons, in the Division of Sugar Plant Investigations, at Beltsville, --

DUMARS: I get it. I get the point.

MOORE: To go back to your unfortunate question -- we couldn't get resistant varieties of seed beets, from Europe -- because in Europe they don't have curly top.

DUMARS: Well...why didn't we raise our own seed?

MOORE: That question makes sense. The sugar beet is a biennial. Ordinarily, it takes two years to produce the seed. The beets are grown in summer, the leaves cut off, the roots put in trenches...and the next year the roots are planted again for seed.

DUMARS: Must take a lot of hand labor.

MOORE: That's the point, Duke. Wages for this work in our country were considerably higher than wages in Europe.

DUMARS: But what did we do for seed, when war broke out in Europe in 1914?

MOORE: We were in a bad fix. We did manage to get a little seed -- but one of the conditions was -- we had to return the gunny sacks to Germany.

DUMARS: Do you mean to say...the fate of our sugar beet industry...depended on whether we sent back a few empty gunny sacks?

MOORE: That's right. Gunny sacks are war material. When we got in to the war, in 1917, things were even worse. We got a little seed from Russia -- but it took it six months to a year to get here.

DUMARS: It's a wonder we had any crop at all.

MOORE: Well, in the 30's, with the bitter experience of the First World War still in mind...and with the new resistant varieties to work with...the sugar beet industry organized to grow its own seed. And in just ten years, we became entirely independent of Europe. Another thing -- remember I said it usually takes two years, to grow the seed?

DUMARS: Yes.

MOORE: Well, thanks to research at the Agricultural Experiment Station in New Mexico, beets for seed are now started in the fall, live through the winter in the ground, and they get seed the next August. Of course that saves some of the big labor cost.

DUMARS: Well I'd say the plant breeders have certainly done right by the sugar beet farmers.

MOORE: They've done their part all right. Given us better sugar beets than we ever had before. Beets adapted to our own soil and climate...resistant to curly top...resistant to another disease known as "leaf spot" or "blight"...and richer in sugar than the old chemists ever dared to hope for.

Working right along with the plant breeders are the seed growers. Producing plenty of seed, so every farmer can get the benefit of the new varieties. And the engineers, too, are moving right along -- saving a lot more hand labor with machinery designed especially for the sugar-beet farmer.

DUMARS: And he's the fellow we're all depending on.

MOORE: He certainly is. The farmers have a goal this year of nearly one and a half times as many acres of sugar beets as they put in last year. Our supply of sugar is lower than at any time since the war began -- so here's hoping the farmers reach their goal.

MUSIC: (CURTAIN)

ANNOUNCER: (LIVE) You've heard Ernie Moore and Duke DuMars of the United States Department of Agriculture, in Number 9 of a series on farm research, and how it's helping the farmers reach their wartime food goals.

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